CLAIMS

What is claimed is:

1.   A computer-based system, comprising:

pre-processor means for performing payment processing between a plurality of consumer payers and a plurality of payees;

database means connected to said pre-processor means for storing a plurality of payment transaction records having data fields for each of such plurality of payment transaction records including at least date and time of processing, amount in local currency, identity of a payer, and identity of a payee;

post-processor means comprising:

a)   means for receiving from said database means connected to said pre-processor means an additional data field that indicates a spending classification code associated with each of said plurality of payment transaction records;

b)   means for discerning a status of said additional data field from a group of statuses consisting of coded status, miscoded status, and empty status;

c)   means for assigning, to each of said plurality of payment transaction records where its said additional data field has a coded status, a single expenditure category code selected from a unique, predetermined set of universal expenditure categories each identified by at least one key word;

d)   means for assigning, to each of said plurality of payment transaction records where its said additional data field has a miscoded status, a single expenditure category code selected from said unique, predetermined set of universal expenditure categories, which said means for assigning is based on content residing in other data fields associated with each of said payment transaction records;

e)   heuristic means for assigning, to each of said plurality of payment transaction records where its said additional data field has an empty status, a single expenditure category code selected from said unique, predetermined set of universal expenditure categories, which said means

for assigning is based on content residing in other data fields associated
with each of said payment transaction records;

memory means connected to said post-processor for storing universal expenditure
categorized payment transaction records, each comprising of data fields originating from
pre-processor means and a separate data field for said single expenditure category code as
assigned by said post-processor means;

database means for storing with said memory means said storing universal expenditure
categorized payment transaction records;

output means connected to said post-processor and said database means for transmitting
said storing universal expenditure categorized payment transaction records; and

network means for connecting said pre-processor means, said post-processor means, said
memory means, said database means, and said output means.

2.   A computer-based system according to claim 1 wherein a plurality of said post-
processor means are operated at different locations comprising:

network means for connecting said plurality of post-processors according to network
topologies selected from a group consisting of ring, tree, cluster, mesh, and a hybrid of a
plurality of a group consisting of ring, tree, cluster and mesh; and

cryptography means for providing security of data transmission among said plurality of
post-processor means.

3.   A method for analyzing pre-processed payment transaction records of consumer
payers in a data mart system generated by at least one post-processor and one analytical
application executing on at least one client computer, the data mart system being
composed of a plurality of storage media devices and a plurality of data network
computers, the method comprising the steps of:

        a) accepting from a plurality of pre-existing databases of said pre-processed
payment transaction records of consumer payers, each of said records
containing at least of processing date and time of payment, amount of
payment in local currency, residence address of consumer payer consisting

of zip code only, identity of payee, and a pre-processor spending classification for consumer financial management if recorded in said pre-existing databases, which step creates post-processed payment transaction records of consumer payers;

b) marking each of said post-processed payment transaction records of consumer payers with a unique transaction number within said data mart system;

c) converting said pre-processor spending classification in each of said post-processed payment transaction records of consumer payers into at least one word according to a predefined table; and

d) applying at least one of a predetermined set of criteria to assign to each of said post-processed payment transaction records of consumer payers a category selected from a unique, predetermined set of universal consumer expenditure categories each identified by at least one key word.

4.   The method according to claim 3 wherein said post-processor assigns one of said universal consumer expenditure categories to each of said post-processed payment transaction records of consumer payers by executing a series of steps consisting of (i) matching a root word of said pre-processor spending classification to a root word of a key word identifying one of said universal consumer expenditure categories, (ii) linking said pre-processor spending classification to one of said universal consumer expenditure categories using a synonym database, (iii) grouping said pre-processor spending classification under one of said universal consumer expenditure categories according to a predetermined subcategory database, and (iv) where said pre-processor spending classification does not exist for said post-processed payment transaction record, assigning one of said universal consumer expenditure categories using said identity of payee contained in said post-processed payment transaction record.

5.   The method according to claim 3 wherein said post-processed payment transaction records of consumer payers are aggregated into aggregated post-processed

consumer payment transaction records by geographic locations of consumer residence addresses; wherein said geographic locations of consumer resident addresses comprise a plurality of geographic region designations; wherein said geographic region designations are selected from a group consisting of nine-digit zip codes, a plurality of nine-digit zip codes, five-digit zip codes, a plurality of five-digit zip codes, zip codes truncated up to a maximum extent leaving at least the first leading digit remaining, a plurality of such truncated zip codes, subdivision, a plurality of subdivisions, township, a plurality of townships, city, a plurality of cities, metropolitan statistical area, a plurality of metropolitan statistical areas, consolidated metropolitan statistical area, a plurality of consolidated metropolitan statistical areas, county, a plurality of counties, building code zone, a plurality of building code zones, state, a plurality of states, time zone, a plurality of time zones, topographical region, a plurality of topological regions, meteorological region, a plurality of meteorological regions, country, a plurality of countries, continent, and a plurality of continents.

6.   The method according to claim 3 wherein said post-processed payment transaction records of consumer payers are aggregated into aggregated post-processed consumer payment transaction records by residence telephone numbers of said consumer payers consisting of a plurality of area codes and a plurality of telephone exchange code areas identified by area codes and three-digit exchange codes associated with each of said area codes.

7.   The method according to claim 3 wherein said payment transaction records of consumer payers are aggregated into aggregated post-processed consumer payment transaction records by processing date and time of payment into a plurality of time intervals; wherein said time intervals are selected from a group consisting of a plurality of minutes, an hour, a plurality of hours less than 24 within a single calendar day, a calendar day, a plurality of hours up to 24 spanning across two calendar days, a plurality of days up to a calendar week, a plurality of calendar days of multiple calendar weeks, a calendar week, a plurality of days, a plurality of weeks, a month, a plurality of months, a calendar

quarter, a calendar year, a fiscal year, a plurality of calendar years, a plurality of fiscal years, and a decade.

8.   The method according to claim 5 wherein said analytical application performs a plurality of functions with amounts of payment for said aggregated post-processed consumer payment transaction records, the method consisting of:

   a) performing a summation of said amounts of payments;

   b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

   c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

   d) sampling randomly from said aggregated post-processed consumer payment transaction records to perform estimates and projections for the entire population of consumers within a plurality of said geographic region designations;

   e) creating economic models based upon a plurality of calculus tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations, related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.

9.   The methods according to claim 6 wherein said analytical application performs a plurality of functions with amounts of payment for said aggregated post-processed consumer payment transaction records, the method consisting of:

   a) performing a summation of said amounts of payments;

   b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

   c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

d) sampling randomly from said aggregated post-processed consumer payment transaction records to perform estimates and projections for the entire population of consumers within a plurality of said geographic region designations;

e) creating economic models based upon a plurality of calculus tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations, related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.

10.   The method according to claim 7 wherein said analytical application performs a plurality of functions with amounts of payment for said aggregated post-processed consumer payment transaction records, the method consisting of:

a) performing a summation of said amounts of payments;

b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

d) sampling randomly from said aggregated post-processed consumer payment transaction records to perform estimates and projections for the entire population of consumers within a plurality of said geographic region designations;

e) creating economic models based upon a plurality of tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations, related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.

11.   A method for analyzing pre-processed payment transaction records of business payers in a data mart system generated by at least one post-processor and one analytical

application executing on at least one client computer, the data mart system being composed of a plurality of storage media devices and a plurality of data network computers, the method comprising the steps of:

a) accepting from a plurality of pre-existing databases of said pre-processed payment transaction records of business payers, each of said records containing at least of processing date and time of payment, amount of payment in local currency, address of business payer including street address and zip code, identity of business payer, identity of payee, and a pre-processor spending classification for business financial management if recorded in said pre-existing databases, which step creates post-processed payment transaction records of business payers;

b) marking each of said post-processed payment transaction records of business payers with a unique transaction number within said data mart system;

c) converting said pre-processor spending classification in each of said post-processed payment transaction records of business payers into at least one word according to a predefined table; and

d) applying at least one of a predetermined set of criteria to assign to each of said post-processed payment transaction records of business payers a category selected from a unique, predetermined set of universal business expenditure categories each identified by at least one key word.

12.   The method according to claim 11 wherein said post-processor assigns one of said universal business expenditure categories to each of said post-processed payment transaction records of business payers by executing a series of steps in preferential order of (i) matching a root word of said pre-processor spending classification to a root word of a key word identifying one of said universal business expenditure categories, (ii) linking said pre-processor spending classification to one of said universal business expenditure categories using a synonym database, (iii) grouping said pre-processor spending classification under one of said universal business expenditure categories according to a

predetermined subcategory database, and (iv) where said pre-processor spending classification does not exist for said post-processed payment transaction record, assigning one of said universal business expenditure categories using said identity of payee contained in said post-processed payment transaction record.

13. The method according to claim 11 wherein said post-processed payment transaction records of business payers are aggregated into aggregated post-processed business payment transaction records by geographic locations of business office address; wherein said geographic locations comprise of a plurality of geographic region designations; wherein said geographic region designations are selected from a group consisting of census block, a plurality of census blocks, census tract, a plurality of census tracts, nine-digit zip codes, a plurality of nine-digit zip codes, five-digit zip codes, a plurality of five-digit zip codes, zip codes truncated up to a maximum extent leaving at least the first leading digit remaining, a plurality of such truncated zip codes, subdivision, a plurality of subdivisions, township, a plurality of townships, city, a plurality of cities, metropolitan statistical area, a plurality of metropolitan statistical areas, consolidated metropolitan statistical area, a plurality of consolidated metropolitan statistical areas, county, a plurality of counties, building code zone, a plurality of building code zones, state, a plurality of states, time zone, a plurality of time zones, topographical region, a plurality of topological regions, meteorological region, a plurality of meteorological regions, country, a plurality of countries, continent, and a plurality of continents.

14. The method according to claim 11 wherein said post-processed transaction records of business payers are aggregated into aggregated post-processed business transaction records by telephone numbers of said business payers consisting of a plurality of area codes and a plurality of telephone exchange code areas identified by area codes and three-digit exchange codes associated with each of said area codes.

15. The method according to claim 11 wherein said post-processed payment transaction records of business payers are aggregated into aggregated post-processed

business payment transaction records by processing date and time of payment into a plurality of time intervals; wherein said time intervals are selected from a group consisting of a plurality of minutes, an hour, a plurality of hours less than 24 within a single calendar day, a calendar day, a plurality of hours up to 24 spanning across two calendar days, a plurality of days up to a calendar week, a plurality of calendar days of multiple calendar weeks, a calendar week, a plurality of days, a plurality of weeks, a month, a plurality of months, a calendar quarter, a calendar year, a plurality of calendar years, a fiscal year, a plurality of fiscal years, and a decade.

16. The method according to claim 13 wherein said analytical application performs a plurality of functions with amounts of payment for said aggregated post-processed business payment transaction records, the method consisting of:

   a) performing a summation of said amounts of payments;

   b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

   c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

   d) sampling randomly from said aggregated post-processed business payment transaction records to perform estimates and projections for the entire population of businesses within a plurality of said geographic region designations;

   e) creating economic models based upon a plurality of calculus tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations, related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.

17. The method according to claim 14 wherein said analytical application performs a plurality of functions with amounts of payment for said aggregated post-processed business payment transaction records, the method consisting of:

a) performing a summation of said amounts of payments;

b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

d) sampling randomly from said aggregated post-processed business payment transaction records to perform estimates and projections for the entire population of business within a plurality of said geographic region designations;

e) creating economic models based upon a plurality of calculus tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations, related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.

18.   The method according to claim 15 wherein said analytical application performs a plurality of functions with amounts of payment for aggregated post-processed business payment transaction records, the method consisting of:

a) performing a summation of said amounts of payments;

b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

d) sampling randomly from said aggregated post-processed business payment transaction records to perform estimates and projections for the entire population of businesses within a plurality of said geographic region designations;

e) creating economic models based upon a plurality of calculus tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations,

related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.

19.   A method for analyzing pre-processed payment transaction records of consumer payers and business payers in a data mart system generated by at least one post-processor and one analytical application executing on at least one client computer, the data mart system being composed of a plurality of storage media devices and a plurality of data network computers, the method comprising the steps of:

    a) accepting from a plurality of pre-existing databases of said pre-processed payment transaction records of consumer payers and business payers, each of said records containing at least of processing date and time of payment, amount of payment in local currency, address of payer consisting of zip code only, identity of payee, and a pre-processor spending classification for payer financial management if recorded in said pre-existing databases, which step which step creates post-processed payment transaction records of payers;

    b) marking each of said post-processed payment transaction records with a unique transaction number within said data mart system;

    c) converting said pre-processor spending classification in each of said post-processed payment transaction records into at least one word according to a predefined table; and

    d) applying at least one of a predetermined set of criteria to assign to each of said post-processed payment transaction records a category selected from unique, predetermined sets of universal expenditure categories each identified by at least one key word.

20.   The method according to claim 19 wherein said post-processor assigns one of said universal expenditure categories to each of said post-processed payment transaction records by executing a series of steps in preferential order of (i) matching a root word of said pre-processor spending classification to a root word of a key word identifying one of

said universal expenditure categories, (ii) linking said pre-processor spending classification to one of said universal expenditure categories using a synonym database, (iii) grouping said pre-processor spending classification under one of said universal expenditure categories according to a predetermined subcategory database, and (iv) where said pre-processor spending classification does not exist for said post-processed payment transaction record, assigning one of said universal expenditure categories using said identity of payee contained in said business payment transaction record.

21.   The method according to claim 19 wherein said post-processed payment transaction records of payers are aggregated into aggregated post-processed payment transaction records by geographic locations of addresses of said payers; wherein said geographic locations comprise of a plurality of geographic region designations; wherein said geographic region designations are selected from a group consisting of nine-digit zip codes, a plurality of nine-digit zip codes, five-digit zip codes, a plurality of five-digit zip codes, zip codes truncated up to a maximum extent leaving at least the first leading digit remaining, a plurality of such truncated zip codes, subdivision, a plurality of subdivisions, township, a plurality of townships, city, a plurality of cities, metropolitan statistical area, a plurality of metropolitan statistical areas, consolidated metropolitan statistical area, a plurality of consolidated metropolitan statistical areas, county, a plurality of counties, building code zone, a plurality of building code zones, state, a plurality of states, time zone, a plurality of time zones, topographical region, a plurality of topological regions, meteorological region, a plurality of meteorological regions, country, a plurality of countries, continent, and a plurality of continents.

22.   The method according to claim 19 wherein said post-processed transaction records of payers are aggregated into aggregated post-processed payment transaction records by principal telephone numbers of payers, wherein said principal telephone numbers consist of a plurality of area codes and a plurality of telephone exchange code areas identified by area code and corresponding three-digit exchange codes.

23.   The method according to claim 19 wherein said post-processed payment transaction records of payers are aggregated into aggregated post-processed payment transaction records by processing date and time of payment into a plurality of time intervals; wherein said time intervals are selected from a group consisting of a plurality of minutes, an hour, a plurality of hours less than 24 within a single calendar day, a calendar day, a plurality of hours up to 24 spanning across two calendar days, a plurality of days up to a calendar week, a plurality of calendar days of multiple calendar weeks, a calendar week, a plurality of days, a plurality of weeks, a month, a plurality of months, a calendar quarter, a calendar year, a plurality of calendar years, a fiscal year, a plurality of fiscal years, and a decade.

24.   The method according to claim 21 wherein said analytical application performs a plurality of functions with amounts of payment for said aggregated post-processed payment transaction records, the method consisting of:

    a) performing a summation of said amounts of payments;

    b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

    c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

    d) sampling randomly from said aggregated post-processed payment transaction records to perform estimates and projections for the entire population of payers within a plurality of said geographic region designations;

    e) creating economic models based upon a plurality of calculus tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations, related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.

25. The method according to claim 22 wherein said analytical application performs a plurality of functions with amounts of payment for said aggregated post-processed payment transaction records, the method consisting of:

a) performing a summation of said amounts of payments;

b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

d) sampling randomly from said aggregated post-processed payment transaction records to perform estimates and projections for the entire population of payers within a plurality of said geographic region designations;

e) creating economic models based upon a plurality of calculus tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations, related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.

26. The method according to claim 23 wherein said analytical application performs a plurality of functions with amounts of payment for said aggregated post-processed payment transaction records, the method consisting of:

a) performing a summation of said amounts of payments;

b) creating statistical and mathematical comparisons of said summations between and among a plurality of said geographic region designations;

c) creating statistical and arithmetic comparisons of said summations between and among a plurality of said time intervals;

d) sampling randomly from said aggregated post-processed payment transaction records to perform estimates and projections for the entire population of payers within a plurality of said geographic region designations;

e) creating economic models based upon a plurality of calculus tools, including the calculus of variations, the calculus of finite differences, integral calculus, the family of ordinary and partial differential equations, related transforms, matrix algebras, higher-order polynomials, chaos theory, the theory of complex numbers, and fractal analysis.